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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,679	01/15/2004	Jeremy E. Dahl	005950-845	4958

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EXAMINER

VENCI, DAVID J

ART UNIT	PAPER NUMBER
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1641

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/758,679

Applicant(s)

DAHL ET AL.

Examiner

David J. Venci

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on November 9, 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 1-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-40 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on January 4, 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 07/12/04; 01/04/05; 08/29/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Examiner acknowledges Applicants' election, with traverse, of Invention II, claims 29-40, in the reply filed November 9, 2006. Applicants argue that "the inventions of Group I and II are so closely related that a proper search of any of the claims would, by necessity, require a proper search of the others" (see Applicants' reply, p. 2, first paragraph, first sentence).

Applicants' argument is not persuasive because a proper search of Invention II did not, in actuality, require a proper search of Invention I (see the instant Office Action and PTO-892-Notice of References Cited). The requirement is still deemed proper and is therefore made FINAL.

Claims 1-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Invention, there being no allowable generic or linking claim.

Currently, claims 29-40 are under examination.

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Information Disclosure Statement

The information disclosure statements filed July 12, 2004, and January 4, 2005, fail to comply with the provisions of 37 CFR § 1.98(b)(5). According to Section 1.98(b)(5), each publication listed in an information disclosure statement must be identified by publisher, authors, title, relevant pages, date, place of publication, (e.g., publisher, authors, title, relevant pages, date, place of publication). Examiner has not considered most of the 200+ publications in either of the disclosures.¹

Specification

The disclosure is objected to because of the following informalities:

On p. 31, line 28, the phrase "This patent" lacks antecedent basis.

Literature citations appear missing from the paragraph beginning on p. 37, line 24.

Appropriate correction is required.

¹ Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Drawings

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

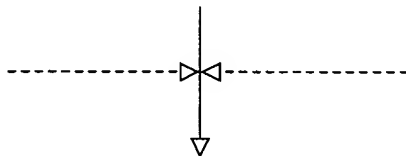
The drawings are objected to under 37 CFR 1.83(a):

1. Fig. 1 fails to show "step 106" as described in the specification at p. 10, line 14.
2. Fig. 11A fails to show "self-assembled or crystallized material 1100" as described in the specification at p. 29, line 23.
3. Fig. 11B fails to show "molecular crystal 1101" as described in the specification at p. 30, line 12.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

In addition, the drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "1001" is used to designate both "diamondoid-containing material" and "molecular crystal".

Fig. 1 is further objected to because of the following undefined symbol:



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Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 29-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 29, 37 and 28:

The term "heterodiamondoid" is indefinite. The identity of one or more member structures belonging to the class "heterodiamondoid" is not clear. According to Specification page 3, lines 26-27: "[a] heteroatom is essentially an impurity atom that has been 'folded into' the diamond lattice". Whether/how a "heterodiamondoid" possess a "diamond lattice" is not clear. How an atom is "folded into" a diamond lattice is not clear. The identity of one ore more objects and/or steps required for making or providing a diamond lattice having an atom "folded into" the diamond lattice is not clear.

In claims 30-34, the phrase "the luminescent event" lacks antecedent basis.

In claim 35:

The essential structural cooperative relationship between "diamondoid lattice" and "diamondoid lattice site" is not clear and appears omitted from the claim.

The essential structural cooperative relationship between "diamondoid lattice site" and "vacancy or pore" is not clear and appears omitted from the claim.

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The term "substitutionally" is indefinite. The identity of one or more reference points required for ascertaining "substitutionally" is not clear.

In claim 36:

The phrases "the diamondoid-containing material", "the bandgap" and "the bandgap of the diamondoid-containing material" lack antecedent bases.

The infinitive "to create" is indefinite. Whether the act or process of "creating" is completed or performed, or merely intended, is not clear. Whether the object(s) and/or steps required for performing "positioning" are coextensive with the object(s) and/or steps required for performing "creating" is not clear.

In claim 37:

The term "after" is indefinite. The identity of one or more temporal instances of "after" is not clear.

In claim 38:

How the step of claim 38 is incorporated into the method of claim 29 is not clear. Whether the step of "reacting" in claim 38 references the step of "binding" in claim 29 is not clear. Whether the object(s) and/or steps required for performing "reacting" are coextensive with the object(s) and/or steps required for performing "binding" is not clear.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 29-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Bronstein & Voyta (US 5,032,381).

Bronstein & Voyta describe a method of detecting a target analyte comprising the steps:

- (a) providing a heterodiamondoid-containing probe (see col. 9, Formula II);
 - (b)(c) binding the heterodiamondoid-containing probe to the target analyte and exciting the biological label with energy (see col. 10, lines 29-32, "adding the chemiluminescent compound to the extracellular fluid so that it penetrates the cell and reaches the enzyme of interest that decomposes and activates said chemiluminescent compound");
 - (d) detecting light emitted from the excited biological label (see Title, "chemiluminescence").
-

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Claims 29-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Bronstein (US 6,514,717).

Bronstein describes a method of detecting a target analyte comprising the steps:

- (a) providing a heterodiamondoid-containing probe (see col. 1, lines 35-40, "a dioxetane having the formula..."; *see also*, col. 2, lines 19-20, "group T of the dioxetane is a polycycloalkyl group, preferably adamantyl"; *see also*, Table 1);
- (b)(c) binding the heterodiamondoid-containing probe to the target analyte and exciting the biological label with energy (see col. 11, lines 37-43, "a dioxetane[...] is added", "The enzyme cleaves group Z", "chromophore Y[...] is thus excited") (paraphrasing mine);
- (d) detecting light emitted from the excited biological label (see Abstract, "chemiluminescence").

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang *et al.* (US 7,070,921) in view of Bronstein (US 6,514,717).

Huang *et al.* describe a method of detecting a target analyte comprising the steps:

- (a) providing a probe (see *e.g.*, Fig. 6, "A^{*}");
- (b)(c) binding the probe to the target analyte and exciting the biological label with energy (see *e.g.*, Fig. 6, "A ↔ A^{*}"; see *also*, col. 14, lines 37-40, "the detectable response may be generated directly using a luminophore associated with[...] A^{*}") (paraphrasing mine);
- (d) detecting light emitted from the excited biological label (see Abstract, "chemiluminescence").

Huang *et al.* do not describe a "heterodiamondoid-containing" probe.

However, Bronstein describe a heterodiamondoid-containing probe (see col. 1, lines 35-40, "a dioxetane having the formula..."; col. 2, lines 19-20, "group T of the dioxetane is a polycycloalkyl group, preferably adamantyl") for use in enzyme-amplified assays (see *e.g.*, col. 2, line 48, "amplification effect").

It would have been obvious for a person of ordinary skill to perform the analyte detection method of Huang *et al.* with "heterodiamondoid-containing" probes because Bronstein discovered that "an external excitation energy source, e.g., light, is not necessary" with heterodiamondoid-containing probes. Furthermore, Bronstein discovered that heterodiamondoid-containing probes resulted in enzyme-amplified assays having optimal decomposition and luminescence kinetics (see col. 3, lines 3-12).

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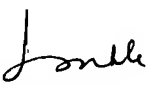
Conclusion

No claims are allowed at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Venci whose telephone number is 571-272-2879. The examiner can normally be reached on 08:00 - 16:30 (EST). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

David J Venci
Examiner
Art Unit 1641

djv


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